



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/645,690	08/24/2000	Lizhong Sun	4215/PDD/CMP/RKK	4428

44257, 7590 06/30/2005

MOSER, PATTERSON & SHERIDAN, LLP  
APPLIED MATERIALS, INC.  
3040 POST OAK BOULEVARD, SUITE 1500  
HOUSTON, TX 77056

EXAMINER

MARKOFF, ALEXANDER

ART UNIT PAPER NUMBER

1746

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/645,690

Applicant(s)

SUN ET AL.

Examiner

Alexander Markoff

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18, 26-31 and 33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 26-31 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. In view of the Appeal Brief filed on 12/27/04, PROSECUTION IS HEREBY REOPENED. New grounds for rejections set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is indefinite because it is not clear what is referenced as "any surface coating material" presented on the wafer surface. This is not clear because CMP does not remove all the coating from the wafer.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-18, 26-31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Small et al (US Patent No 6,498,131) in view of Prigge et al (US Patent No 5,167,667), Scrovan (US Patent No 5,645,682), Talieh et al (US Patent No

Art Unit: 1746

5,692,947), Kennedy et al (US Patent NO 6,280,299) and Sirchevski et al (US Patent No 6,352,595).

Small et al teach a method for cleaning CMP apparatus with a cleaning composition. The cleaning composition comprises the claimed ingredients and has the claimed pH. The method comprises application of the composition to different surfaces of CMP apparatus, after CMP of wafers with surfaces comprising copper, as well as after polishing of other substrates. The method further comprises rinsing with water. See entire document especially column 2, line 64 – column 5, line 51.

Small et al do not specifically teach the concentration for amines. However, they disclose composition with about 5% of monoethanolamine and state that lesser concentrations can be used.

Small et al do not specifically teach application of the composition to clean the polishing pad. However, they do not limit the method to any specific surface or part of the apparatus.

On the other hand, Prigge et al, Scrovan, Talieh et al, Kennedy et al and Sirchevski et al evidence that cleaning polishing pads of CMP apparatuses was conventionally done in the industry. All these documents teach cleaning polishing pads of CMP apparatus with cleaning solutions applied to moving pads. All these documents teach rinsing the pads after cleaning. At least Prigge et al, Scrovan, and Talieh et al teach removal of residue from the pad in addition to cleaning.

Having the combined teachings of Small et al and Prigge et al, Scrovan, Talieh et al, Kennedy et al and Sirchevski et al it would have been obvious to an ordinary artisan

Art Unit: 1746

at the time the invention was made to apply the cleaning solution of Small et al for cleaning polishing pads of CMP apparatus with reasonable expectation of success in order to have the pad cleaned because Small et al teach the composition for cleaning CMP apparatuses to remove slurry residue and other processing residues and because Prigge et al, Scrovan, Talieh et al, Kennedy et al and Sirchevski et al teach that polishing pads of the apparatus are conventionally cleaned to remove such residues.

As to the limitations directed to duration of cleaning and rinsing: The duration of cleaning and rinsing is a result effective variable. It would have been obvious to an ordinary artisan at the time the invention was made to conduct cleaning and rinsing in the modified method of Small et al till the desired cleaning results are achieved.

As to the limitations directed to the flow rate:

Flow rate of the cleaning solution is a result effective variable. It would have been obvious to an ordinary artisan to find an optimum flow rate of the cleaning solution by routine experimentation depending from the size of the cleaning pad and level and type of the contamination in order to enhance the cleaning.

As to the limitations directed to concentration of amines:

As it has been shown above, Small et al teach concentration range, which includes the claimed range. The concentration of the active ingredient is a result effective variable. It would have been obvious to an ordinary artisan at the time the invention was made to determine an optimum concentration of amines in the composition in the modified method of Small et al by routine experimentation in order to enhance the cleaning.

Art Unit: 1746

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexander Markoff  
Primary Examiner  
Art Unit 1746

am

ALEXANDER MARKOFF  
PRIMARY EXAMINER

MICHAEL BARR  
SUPERVISORY PATENT EXAMINER /1746  
